

## QuakeSim Portal Installation Guide

Software Version 0.866025

Contact: Marlon Pierce [marpierc@indiana.edu](mailto:marpierc@indiana.edu) 812-856-1212

---

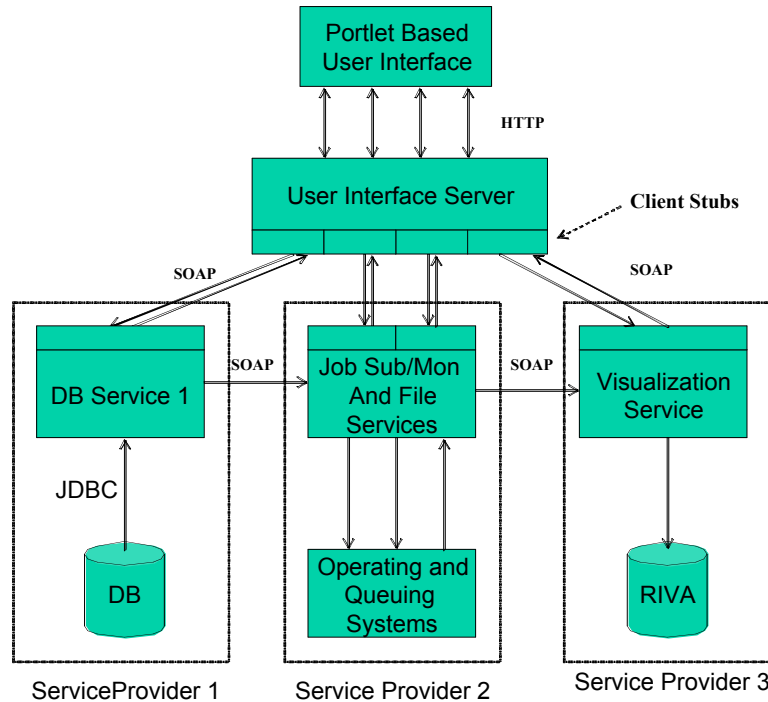
### System Overview and Supporting Documentation

---

This guide describes the installation procedures for setting up the QuakeSim Computational Web Portal. For background information, design documents, and system capabilities, please refer to QuakeSim information web site, <http://www-aig.jpl.nasa.gov/public/dus/quakesim/milestones.html>. Additional information may be found at <http://www.servogrid.org>.

In order to install the QuakeSim portal software, it is necessary to understand the system architecture. Detailed information may be obtained from the design documents; we only review the system here.

QuakeSim is designed to support distributed execution of third party scientific applications. The portal system consists of a single **User Interface Server** (UIS) and one or more **Server Providers** (SP). These are Web service-enabled web servers that may physically reside on the same or separate machines. The general architecture of the system as depicted in Figure 1.



**Figure 1 QuakeSim portal architecture**

The figure depicts three example service sets: DB access; Job submission, monitoring, and file access; and visualization services.

The QuakeSim portal is built with both newly developed and third party software. We provide two bundles:

- The UIS Bundle: provides everything needed to set up a User Interface Server. Includes Apache Tomcat, Jetspeed, and Apache Axis, as well as QuakeSim portal software.
- The SP Bundle: provides everything needed to set up a Service Provider. Includes Apache Tomcat, Apache Axis, and QuakeSim Web Service software.

Third party software is described in the next section.

These installations assume familiarity with the UNIX operating system.

---

## Preparing for Installation: Hosts, Development Kits, and Third Party Software

---

### Server Hosts

You should first identify the host machine(s) that you want to use to install and run the portal system. All QuakeSim code is written in Java and so should run on all platforms; however, certain components (external system calls, interactions with the file system) have not been tested for true platform independence.

QuakeSim software has been tested and on the following platforms/operating systems, which we recommend for your installation.

1. PC: Redhat Linux 7.x and higher.
2. Sun: Solaris 2.7 and higher
3. SGI: IRIX 6.x and higher

No particular shell is preferred. However, most applications were developed and tested using the bash shell.

### Compilers, SDKs, and Build Tools

All software (including third party code) is written in Java. You should install the Java 2 SDK v 1.4.x or higher on all hosts. You should verify that your Java installation has both the compiler (javac) and the runtime bytecode interpreter (java) in the \$PATH. You may use the Java interpreter to verify the version of the installation:

```
[shell prompt> java -version.
```

The UIS and SP bundles are installed using **Apache Ant**. You should download and install Ant v 1.5.x or higher on all hosts and should put Ant's bin directory in your \$PATH. The ant bin directory includes the "ant" executable that will be needed to install the system bundles. See <http://ant.apache.org/> for information, downloads, and installation instructions.

To unpack the distribution tar files, it is recommended that you use the Gnu tar utility; vendor-supplied tar utilities (particularly Sun's) have problems with long directory path names.

### Third Party Software

The following third party software is used in this release. You need to download and install Tomcat and Jetspeed. Axis is included in the release.

- **Apache Tomcat Web Server v 4.x:** Tomcat servers are run on all hosts. See <http://jakarta.apache.org/tomcat/> for more information. *You must download and install Tomcat 4.0.x or Tomcat 4.1.x. Tomcat 5.0.x also works.*
- **Jetspeed v 1.4:** Jetspeed is a web application that runs in the UIS tomcat server. See <http://jakarta.apache.org/jetspeed/site/index.html>. *You must download Jetspeed 1.4. You can get a version of Jetspeed 1.4 from this URL: <http://www.apache.org/dist/jakarta/jetspeed/binaries/>. The portal has not been tested with Jetspeed 1.5 or later.*
- **Apache Axis v 1.0/1.1:** Axis is a Web Service hosting environment that runs as a web application in Tomcat. Axis also includes tools for deploying and managing services and for creating client side stubs. *Axis is included in our release, with specific service implementations*

---

## Installing the UIS Bundle

---

YOU MUST FIRST INSTALL TOMCAT 4.X OR 5.0.X AND JETSPEED 1.4b4 OR LATER BEFORE PROCEEDING. To install Jetspeed, you should first either download a pre-built Jetspeed 1.4 war file or build it from scratch. Both binary and source releases are available from the Jetspeed URL above. Copy jetspeed.war from the release directory to Tomcat's webapp directory and start Tomcat using startup.sh or startup.bat from \$TOMCAT\_HOME/bin/. You can verify this installation by pointing your browser to <http://localhost:8080/jetspeed>.

After completing this test, you MUST shutdown tomcat before installing the portal. Use the \$TOMCAT\_HOME/bin/shutdown.sh command for Unix/Linux.

After setting up your UIS host environment as described in the previous section, download the package UISBundle.tar.gz from the following link: <http://www.servogrid.org/slide/GEM/Interop/Downloads/UISBundleMSJ.tar.gz>.

### Unpack the Files

Place the tar package in the home directory where you plan to run the UIS software. It is recommended that you do this with a regular (UNIX) user account. To unpack the system software, use the following shell command:

```
[shell prompt> tar -zxf UISBundleMSJ.tar.gz
```

This assumes you have Gnu tar installed and in your \$PATH. If you do not (and your tar command does not recognize the -z option), you may use the following commands:

```
[shell prompt> gunzip UISBundleMSJ.tar.gz
[shell prompt> tar -xf UIBundleMSJ.tar
```

In either case, unpacking the bundle will create a directory called GCWS\_Source, which has the subdirectories GCWS and Portlets. You will need to edit the build.properties files in both of these directories and run ant in each subdirectory. The following provides detailed descriptions of how to do this.

### Edit Configuration Information

Move into GCWS directory.

```
[shell prompt> cd $HOME/GCWS
```

Next, open the file "build.properties" file and set the following values:

```
#This is your tomcat path
TOMCAT_HOME=${env.HOME}/jakarta-tomcat-5.0.19
```

```
# These are names for webapps in the tomcat home
JETSPEED_HOME=${TOMCAT_HOME}/webapps/jetspeed
GCWS_HOME=${JETSPEED_HOME}/GCWS

# These are needed to configure xregs
UI_SERVER_NAME=gf4.ucs.indiana.edu
HOST_URL=http://${UI_SERVER_NAME}:6060
```

The property “TOMCAT\_HOME” should be set to the base directory where you run Tomcat. For example, if you have created an account called “webportal” on your Linux host and installed Tomcat 4.1.24, you would set tomcat.home=/home/webportal/jakarta-tomcat-4.1.24.

You should not change the JETSPEED\_HOME or GCWS\_HOME properties. These are used internally.

Finally, set the UI\_SERVER\_NAME property to be your server’s domain name, and set HOST\_URL to the base URL of your Tomcat server. You can also use localhost or 127.0.0.1 for the configuration options here. You must include the server’s port number. The default setting for Tomcat is 8080.

### **Edit the Portlets Configuration Information**

You must next edit the build.properties file in Portlets.

```
[shell prompt> cd $HOME/GCWS_Source/Portlets
[shell prompt> vi build.properties
```

This file has two lines:

```
TOMCAT_HOME=${env.HOME}/jakarta-tomcat-5.0.25
JETSPEED_HOME=${TOMCAT_HOME}/webapps/jetspeed
```

You only have to edit the first line, matching it to your local Tomcat installation directory.

### **Configure UIS Runtime Properties**

If you want to use your portal installation with the default Indiana University Web Service instances (i.e., you only want to run the UI Server), proceed to “Deploy the UIS Software.”

For a complete installation, you should open and edit the file GCWS\_Source/GCWS/WEB-INF/conf/GEMDSTEST.properties.

If you are also installing services, you must change the first set of properties labeled SOAP SERVER URLS. The format of these entries should be

```
my.server.dns.name=http://my.server.dns.name:port/GCWS/services
```

You need one of these entries for each of the SP servers that you use. If you add a new SP, you must edit this file and restart the UIS’s tomcat server.

Edit other properties in this file as instructed in the property file.

### **Deploy the UIS Software**

From the \$HOME/GCWS\_Source/GCWS directory, run the following command.

```
[shell prompt> ant all
```

Make sure that you have ant in your \$PATH, or else use the full path the to executable. This will use the file build.xml and the properties build.properties to install all Portal software.

From the \$HOME/GCWS\_Source/Portlets directory, run the following command.

```
[shell prompt> ant
```

As before, make sure that you have ant in your \$PATH, or else use the full path the to executable. This will use the file build.xml and the properties build.properties to install specific portlet code.

### **Start and Check the UIS**

To start the Tomcat web server (and thus all deployed applications), use the following command:

```
[shell prompt> $TOMCAT_HOME/bin/startup.sh
```

This will start the web server on port 8080 by default. To change this port, you should edit the file \$TOMCAT\_HOME/conf/server.xml, as described in the Tomcat documentation.

To check that the server is running and the UIS is installed, point a Web browser to <http://your.server.name:8080/jetspeed>. You can log in using the default account/password gateway/gateway.

To shut down the UIS, run the command

```
[shell prompt> $TOMCAT_HOME/bin/shutdown.sh
```

---

## **Installing the SP Bundle**

---

After setting up your SP host environment as described above, download the package SPBundle.tar.gz from the following link: <http://www.servogrid.org/slide/GEM/Interop/Downloads/SPBundle.tar.gz>. These instructions are essentially the same as for the UIS bundle. *Note that the*

*installation packages do not allow you to run the UIS and SP bundles on the same server.*

It is recommended that you use the Gnu tar utility; vendor-supplied tar utilities (particularly Sun's) have problems with long directory path names. Also, make sure that the ant executable is in your \$PATH. You may also use the full path to the ant command if you prefer.

### **Unpack the Files**

Place the tar package in the home directory where you plan to run the SP software. It is recommended that you do this with a regular (UNIX) user account. To unpack the system software, use the following shell command:

```
[shell prompt> tar -zxf SPBundle.tar.gz
```

This assumes you have Gnu tar installed and in your \$PATH. If you do not (and your tar command does not recognize the -z option), you may use the following commands:

```
[shell prompt> gunzip SPBundle.tar.gz  
[shell prompt> tar -xf SPBundle.tar
```

In either case, unpacking the bundle will create a directory called SPBundle. Move into this directory.

```
[shell prompt> cd $HOME/SPBundle
```

### **Edit Configuration Information**

Next, open the file "build.properties" file and set the following values:

```
###  
# Apache Ant build parameters. Please change to appropriate values.  
###  
TOMCAT_HOME=/your/home/your-tomcat
```

The property "TOMCAT\_HOME" should be set to the base directory where you run Tomcat. For example, if you have created an account called "webportal" on your Linux host and installed Tomcat 4.1.24, you would set TOMCAT\_HOME=/home/webportal/jakarta-tomcat-4.1.24. The SP will install two subdirectories in Tomcat's webapps directory: GCWS and Axis.

### **Deploy the SP Software**

From the \$HOME/SPBundle directory, run the following command.

```
[shell prompt> ant
```

Make sure that you have ant in your \$PATH, or else use the full path to the executable. This will use the file build.xml and the properties build.properties to install all software.

### **Start and Check the SP**

To start the Tomcat web server (and thus all deployed applications), use the following command:

```
[shell prompt> $TOMCAT_HOME/bin/startup.sh
```

This will start the web server on port 8080 by default. To change this port, you should edit the file \$TOMCAT\_HOME/conf/server.xml, as described in the Tomcat documentation.

To check that the server is running and the SP is installed, point a Web browser to `http://your.server.name:8080/axis/services/` and `http://your.server.name:8080/GCWS/services`. You should see a list of deployed services.

To shut down the SP, run the command

```
[shell prompt> $TOMCAT_HOME/bin/shutdown.sh
```